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RECORD OF ORAL HEARING

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte OLIVER HARNACK, WILLIAM E. FORD,
JURINA WESSELS, and AKIO YASUDA

Appeal 2009-007944
Application 10/631,351
Group Art Unit 1600

Oral Hearing Held: February 2, 2010

Before TONI R. SCHEINER, DONALD E. ADAMS, and
LORA M. GREEN, Administrative Patent Judges.

ON BEHALF OF THE APPELLANTS:

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The above-entitled matter came on for hearing on Tuesday, February 2, 2010, commencing at 10:20 a.m., at the U.S. Patent and Trademark Office, 600 Dulany Street, 9th Floor, Alexandria, Virginia, before Jan M. Jablonsky, Notary Public.

THE CLERK: Good morning. Calendar number 8, appeal number 2009-007944, Mr. Doughty.

JUDGE SCHEINER: Thank you. Good morning.

MR. DOUGHTY: Hi there.

JUDGE SCHEINER: Oh, before we get started, are you also arguing the next case? It is your firm –

MR. DOUGHTY: No, Harris Pitlick is arguing –

JUDGE SCHEINER: Oh, okay. That is fine, because we do need some time between the two, so –

MR. DOUGHTY: An intermission there –

JUDGE SCHEINER: Pardon me?

MR. DOUGHTY: Intermission?

JUDGE SCHEINER: Yes, we do, actually. Okay, all right. Well, that works out well, then.

MR. DOUGHTY: Can I approach the reporter?

JUDGE SCHEINER: Yes, as long as it is only to put something that is already of record -- okay.

MR. DOUGHTY: My business card, which is not –

JUDGE SCHEINER: Oh, thank you. That is pretty -- that is very helpful.

(Pause.)

MR. DOUGHTY: May it please the Board, my name is Jacob Doughty, and I represent Oliver Harnack and his co-inventors, who are the

Appellants in this matter. For the purpose of my oral presentation today, I am going to focus on independent Claim 2, and the obviousness rejection over the combination of Ford and Klein, and the obviousness rejection over Ford and Schueller.

Claim 2 is directed to a method in which a hydrophobic surface is provided. Hydrophilic macromolecules are mobilized on a hydrophobic surface, and then the immobilized hydrophilic macromolecules are exposed to a hydrophilic species so that the hydrophilic species become attached to the immobilized hydrophilic macromolecules.

So, that's a lot of "hydrophilic" and "hydrophobic" but, in sum, what's going on is we are taking a substrate, and we're putting a macromolecule with a DNA molecule or something on the substrate, and then we are treating it with, for example, gold nano particles to form, like, a nano wire of sorts. This is an example of what's going on.

So, basically, you have this hydrophobic substrate, and then there is the hydrophilic DNA molecule, and then the hydrophilic gold nano particles, which are -- adhere to the DNA molecule. So at the end, hopefully what you have is a thin stream of DNA, which is supporting a strand of a metallic substance to form a wire which might be useful in forming circuits on a –

JUDGE ADAMS: So, in your description of the claim, does it exclude these nano particles from binding any place other than the nucleic acid?

MR. DOUGHTY: No, it doesn't. The claim doesn't exclude -- as I will discuss a little bit, that's the intent -- that's how we -- that's the distinction that we are making over what's going on in the prior art. The

reason why we don't think it would be obvious to select the particular materials that are used –

JUDGE ADAMS: Okay.

MR. DOUGHTY: But the claim itself doesn't exclude that from the current.

So, Ford, which is the primary reference that I wanted to discuss is the prior work of the Appellant. And this discloses a hydrophilic substrate on which hydrophilic nucleic acids are immobilized and then metalized, using a hydrophilic species.

Klein discloses immobilizing a hydrophilic nucleic acid on a hydrophobic substrate. So, Appellants don't dispute that it is known to immobilize a hydrophilic macromolecule, DNA or something like that, on a hydrophobic substrate. What is disputed is whether or not it would have been obvious to use that combination of hydrophobic substrate and hydrophilic macromolecule in a situation where you want to label these things or metalize them using a hydrophilic species.

Neither Ford nor Klein discloses the particular combination of features that's in Claim 1. So, mainly, there is no reference on the record which has the hydrophobic substrate and hydrophilic macromolecule, and hydrophilic species.

To obtain the method of Claim 2 from the teachings of Ford and Klein, it would be necessary to replace the hydrophilic substrate of Ford with the hydrophobic substrate of Klein.

So, the question is whether one of ordinary skill in the art would have expected success upon making such a modification. It's the Appellant's position that it was generally understood that when you have a hydrophobic substrate, that a hydrophilic species such as metal nano

particles, or something like that, will adhere non-specifically to the substrate.

So, basically, the examples that are discussed, for example, in the prior art is -- the antibodies or something like that in the -- I think it was the Caldwell reference, where if you -- when you try to treat things on a hydrophobic substrate, you cannot control where the hydrophilic species is attached. So if you want it to localize to something that was on that substrate, it would be difficult to do, because you would expect it to attach not only to what you wanted it to attach to, but also to –

JUDGE SCHEINER: Well, why don't we talk about the Fan reference, though, because that is more relevant to the combination -- the evidence that -- Fan is evidence that you submitted?

MR. DOUGHTY: Yes.

JUDGE SCHEINER: Is that correct?

MR. DOUGHTY: Mm-hmm.

JUDGE SCHEINER: Okay.

MR. DOUGHTY: So, basically, we -- the Examiner had -- we had mentioned Caldwell as disclosing a certain hydrophilic species that would adhere non-specifically. The Examiner took a position that, in the Ford reference, what's being attached is nano particles, metallic nano particles, so that this teaching with respect to the non-specific finding of these particular macro molecules is not necessarily pertinent to what is going on in Ford.

So, we provided another reference, the Fan reference. And basically, this reference is a reference that is comparing different surface-coated -- some assembled monolayers of -- on gold, for example. Another

thing they're doing is looking at particles that have certain surface groups on them, and determining the degree to which they adhere to the substrates.

And so, basically, this is just a model to discuss the effects of sort of changing these groups that are on the outside of the -- call it a gold particle, or monolayer, to determine what their propensities are, with respect to adhering to each other. And so, basically, the Fan reference shows, for example, that looking at a hydrophobic particle and a hydrophilic particle, both have a tendency to adhere more strongly to hydrophobic surfaces.

And so, again, we don't claim that this is precisely the same type of particles that are going on in Ford, but just to sort of give a general flavor of what one of ordinary skill in the art would understand, sort of looking at the totality of the information that's out there.

So, taking that into consideration, it's been our position that one of ordinary skill in the art would expect, by substituting the substrate of Ford with the polystyrene that's discussed in Klein, that the result would be sort of this non-specific binding, which would be unsuitable for forming sort of a precise structure, like a wire.

And I just wanted to point out something else about Klein. If you look at Klein, Klein is directed to this combing process, whereby -- what they are intending to do is take -- to form like a polystyrene line on the substrate, and then use this polystyrene line to bind to an end of a DNA molecule. And basically, what they want to do is drag this out of a reaction, a liquid or something like that, and the effect is that it straightens out the DNA molecule.

So, Klein includes some disclosure in the beginning of the reference -- I think on the first page on the left column -- sort of abstract possibilities for which this process can be used. And the one that was of

interest to the Examiner, and I think may be of interest to you, is they mention the possibility of forming wires.

The thing that I wanted to emphasize with respect to this disclosure is that if you look -- again, I'm looking at page 2396 of Klein, the left-hand column beginning with the second paragraph -- and basically, what they're talking about is the fact that you could form wires, and wires can be formed on things like -- I think they're saying substrates such as glass or sylene-treated substrates.

So, basically, what they're talking about here is the formation of wires on hydrophobic -- hydrophilic substrates.

JUDGE SCHEINER: Sylene-treated – yes, mm-hmm.

MR. DOUGHTY: Yes. So, even if you're looking at what is going on in Klein, they are using sort of these lines of polystyrene to affect the lengthening and straightening of the DNA. But the portions that are immobilized and intended to be labeled, to be structured, are not -- they're not on a hydrophobic substrate. I mean they would have to be on a hydrophilic substrate.

There is nothing in this reference or in these other references that would suggest that you could do this sort of specific labeling of a hydrophilic species, or a hydrophilic macromolecule with a hydrophilic species, unless it's sitting on top of a hydrophilic substrate. So, that's the point I wanted to emphasize with respect to that.

So -- and Schueller reference, which is the other combination, it's sort of the same situation. Basically, Schueller is disclosing the possibility of adhering a hydrophilic macromolecule to a hydrophilic substrate. But again, we don't have this additional aspect of labeling, and for the same reasons that we discussed with respect to Klein and Ford. One

would not expect that you could accomplish this sort of precision wire-making type thing that they're trying at Ford –

JUDGE SCHEINER: Right. So is it fair to say that even though your claim does not eliminate or does not preclude the possibility of the hydrophilic species binding everywhere, you would not combine either Klein or Schueller -- well, we have not really gotten to Schueller -- but you would not combine that with Ford, because of what Ford is trying to accomplish?

MR. DOUGHTY: Exactly, exactly.

JUDGE SCHEINER: Okay.

MR. DOUGHTY: Ford is attempting to achieve a precision, in terms of the wire, and non-specific binding would undermine that purpose. So that's why we –

JUDGE SCHEINER: And that -- even though Fan is colloidal gold, it is close enough, is that your position?

MR. DOUGHTY: Yes. Right, right. So, I mean, it would be understandably difficult for us to find a study that is, you know, dealing exactly with the situation that –

JUDGE SCHEINER: Well, sure, we would like to see that, especially if it was an earlier date.

MR. DOUGHTY: So, basically, our position is just sort of the totality of –

JUDGE SCHEINER: I see, okay. Well, I -- okay. I think we understand that part.

MR. DOUGHTY: So, basically, I don't have any specific additional comments with respect to Schueller, other than –

JUDGE SCHEINER: Right, Schueller is very similar, yes.

MR. DOUGHTY: -- the same arguments that I made with respect to –

JUDGE SCHEINER: Okay.

MR. DOUGHTY: Does anyone have any questions?

JUDGE SCHEINER: I do have a question, a sort of a housekeeping question.

MR. DOUGHTY: Sure.

JUDGE SCHEINER: There was an obviousness-type double patenting rejection, provisional, I think.

MR. DOUGHTY: Yes.

JUDGE SCHEINER: And I do not have my notes with me. I think I looked that up, and that other case or cases are still pending. So it is still a provisional. And they –

MR. DOUGHTY: That is my understanding. I don't want to say –

JUDGE SCHEINER: Okay.

MR. DOUGHTY: -- clearly on the record that –

JUDGE SCHEINER: No, I understand that. But the Examiner did not repeat that rejection. Is that correct, or –

MR. DOUGHTY: Well, I think the rejection is still outstanding.

JUDGE SCHEINER: Okay.

MR. DOUGHTY: We had requested that it be held in abeyance.

JUDGE SCHEINER: Okay.

MR. DOUGHTY: But we didn't address it in our –

JUDGE SCHEINER: All right. But it is your understanding that it is still outstanding?

MR. DOUGHTY: That's my understanding –

JUDGE SCHEINER: Okay. In that case, we may summarily affirm it –

MR. DOUGHTY: They will have to be –

JUDGE SCHEINER: -- I am not sure yet how we will handle that.

MR. DOUGHTY: And, you know, these –

JUDGE SCHEINER: Right, okay.

MR. DOUGHTY: Anything else?

JUDGE SCHEINER: I do not have anything further. Do you have anything? I think that is it.

MR. DOUGHTY: Thank you very much.

Whereupon, at 10:33 a.m., the proceedings were concluded.